

## Claims

What is claimed is:

1. A device for use with an embolic protection filter, comprising:  
an elongate sheath having a proximal region, a distal region, a lumen extending at least partially therethrough, and a distal mouth disposed adjacent the distal region;  
wherein the distal mouth is expandable and is adapted to shift between a basal configuration and an enlarged configuration; and  
wherein the distal region includes a bulbous member in the basal configuration.
2. The device of claim 1, wherein the bulbous member includes a tapered proximal edge and a tapered distal edge.
3. The device of claim 1, wherein the proximal region of the sheath is defined by a first tubular shaft and the distal region of the sheath is defined by a second tubular shaft attached to the first shaft.
4. The device of claim 1, wherein the sheath includes a braid.
5. The device of claim 4, wherein the braid is disposed adjacent the distal region.
6. The device of claim 4, wherein the braid is disposed adjacent the bulbous member.

7. The device of claim 4, wherein the braid includes a plurality of fibers that are braided together, and wherein at least one of the fibers includes a radiopaque material.

8. The device of claim 1, wherein the bulbous member includes a plurality of subunits.

9. The device of claim 1, wherein the sheath includes one or more longitudinal grooves.

10. The device of claim 9, wherein the one or more grooves are disposed adjacent the bulbous member.

11. The device of claim 9, wherein the one or more grooves extend proximally of the bulbous member.

12. The device of claim 1, wherein at least a portion of the distal region has an increased thickness.

13. The device of claim 12, wherein the portion of the distal region that has an increased thickness is disposed adjacent the bulbous member.

14. The device of claim 1, wherein the distal region includes a support coil.

15. A medical device, comprising:
- an elongate sheath having a proximal region, a distal region, a lumen extending therethrough, and a bulbous region disposed adjacent the distal region; and
- wherein the lumen adjacent the distal region is flared so that the sheath has a first inside diameter adjacent the proximal region and a second inside diameter adjacent the distal region, the second inside diameter being greater than the first inside diameter.
16. The device of claim 15, wherein the sheath includes a braid.
17. The device of claim 15, wherein the braid is disposed adjacent the distal region.
18. The device of claim 15, wherein the braid is disposed adjacent the bulbous region.
19. The device of claim 15, wherein the braid includes a plurality of fibers that are braided together, and wherein at least one of the fiber includes a radiopaque material.
20. The device of claim 15, wherein the sheath includes one or more longitudinal grooves.

21. The device of claim 20, wherein the one or more grooves are disposed adjacent the bulbous member.

22. The device of claim 20, wherein the one or more grooves extend proximally of the bulbous member.

23. A delivery and retrieval sheath for use with embolic protection filtering devices, comprising:

an elongate tubular sheath having a proximal region, a distal region, and a lumen extending therethrough;

means for funneling a filter into the lumen; and

means for strengthening the distal region.

24. A device for retrieving an embolic protection filter, comprising:

an elongate tube proximal region, a distal region, an outside diameter, and a filter lumen extending at least partially therethrough;

a bulbous member coupled to the distal region of the tube to define a retrieval sheath, the bulbous member having an outside diameter that is greater than the outside diameter of the tube;

the bulbous member including a proximal tapered surface and a distal tapered surface;

wherein the retrieval sheath is configured to be slidable along a guidewire;

wherein the distal tapered surface provides the retrieval sheath with a gradual transition in outside diameter adjacent the bulbous member when the sheath is distally advanced along the guidewire; and

wherein the proximal tapered surface provides the retrieval sheath with a gradual transition in outside diameter adjacent the bulbous member when the sheath is proximally retracted along the guidewire.

25. The device of claim 24, wherein the proximal region of the tube is defined by a first tubular shaft and the distal region of the tube is defined by a second tubular shaft attached to the first shaft.

26. The device of claim 24, wherein the retrieval sheath includes a braid.

27. The device of claim 26, wherein the braid is disposed adjacent the distal region.

28. The device of claim 26, wherein the braid is disposed adjacent the bulbous member.

29. The device of claim 26, wherein the braid includes a plurality of fibers that are braided together, and wherein at least one of the fiber includes a radiopaque material.

30. The device of claim 24, wherein the bulbous member is integral with the distal region.

31. The device of claim 24, wherein the bulbous member includes a plurality of subunits.

32. The device of claim 24, wherein the retrieval sheath includes one or more longitudinal grooves.

33. The device of claim 32, wherein the one or more grooves are disposed adjacent the bulbous member.

34. The device of claim 32, wherein the one or more grooves extend proximally of the bulbous member.

35. The device of claim 24, wherein the distal region includes a support coil.